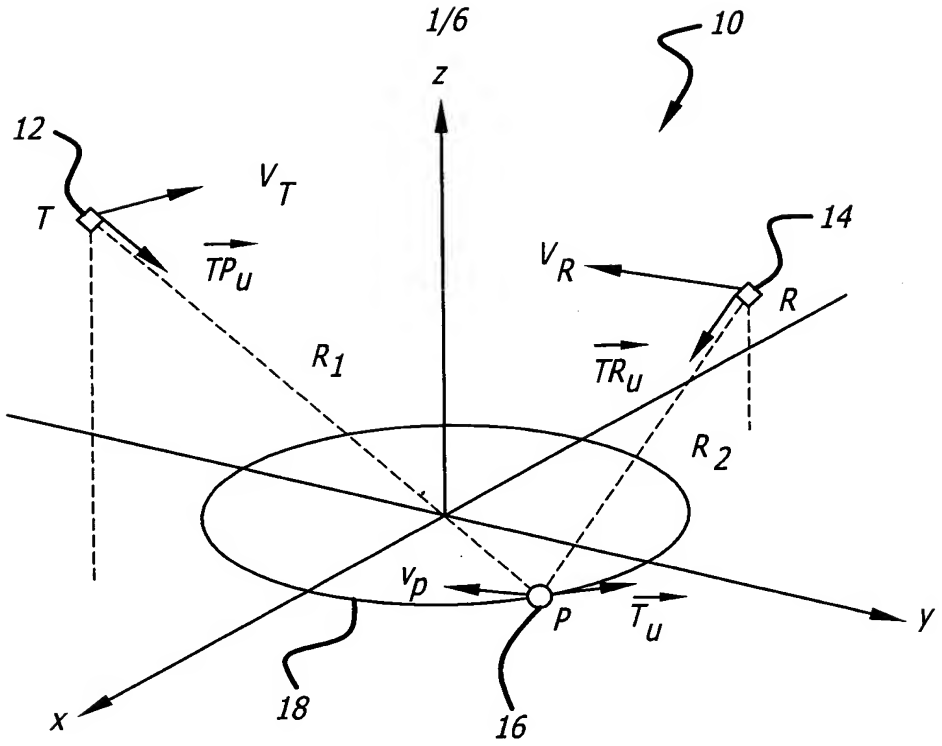
10
z
12
T
V_T
$\overrightarrow{TP_u}$
14
V_R
R
R_1
$\overrightarrow{TR_u}$
R_2
v_p
P
$\overrightarrow{T_u}$
y
x
18
16

FIG. 1

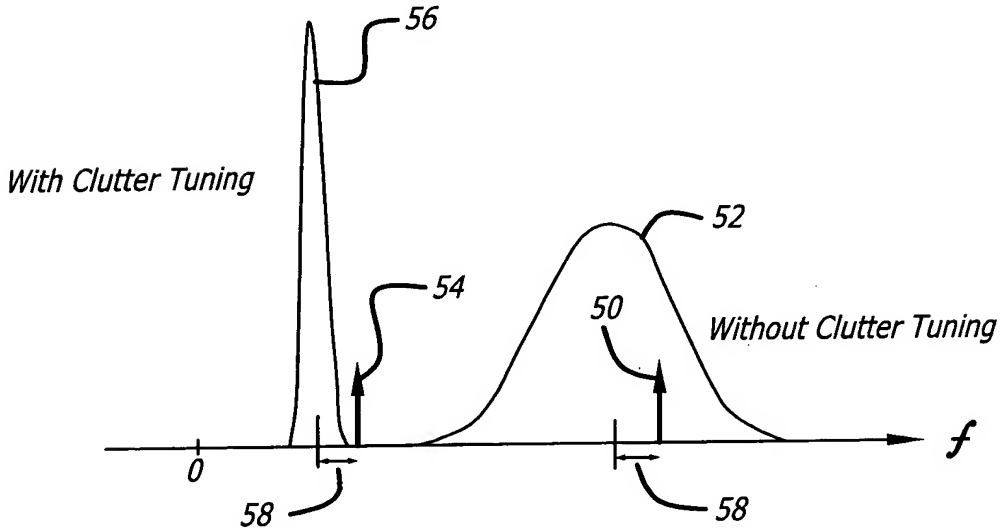
56
With Clutter Tuning
52
54
50
Without Clutter Tuning
f
0
58
58

FIG. 2

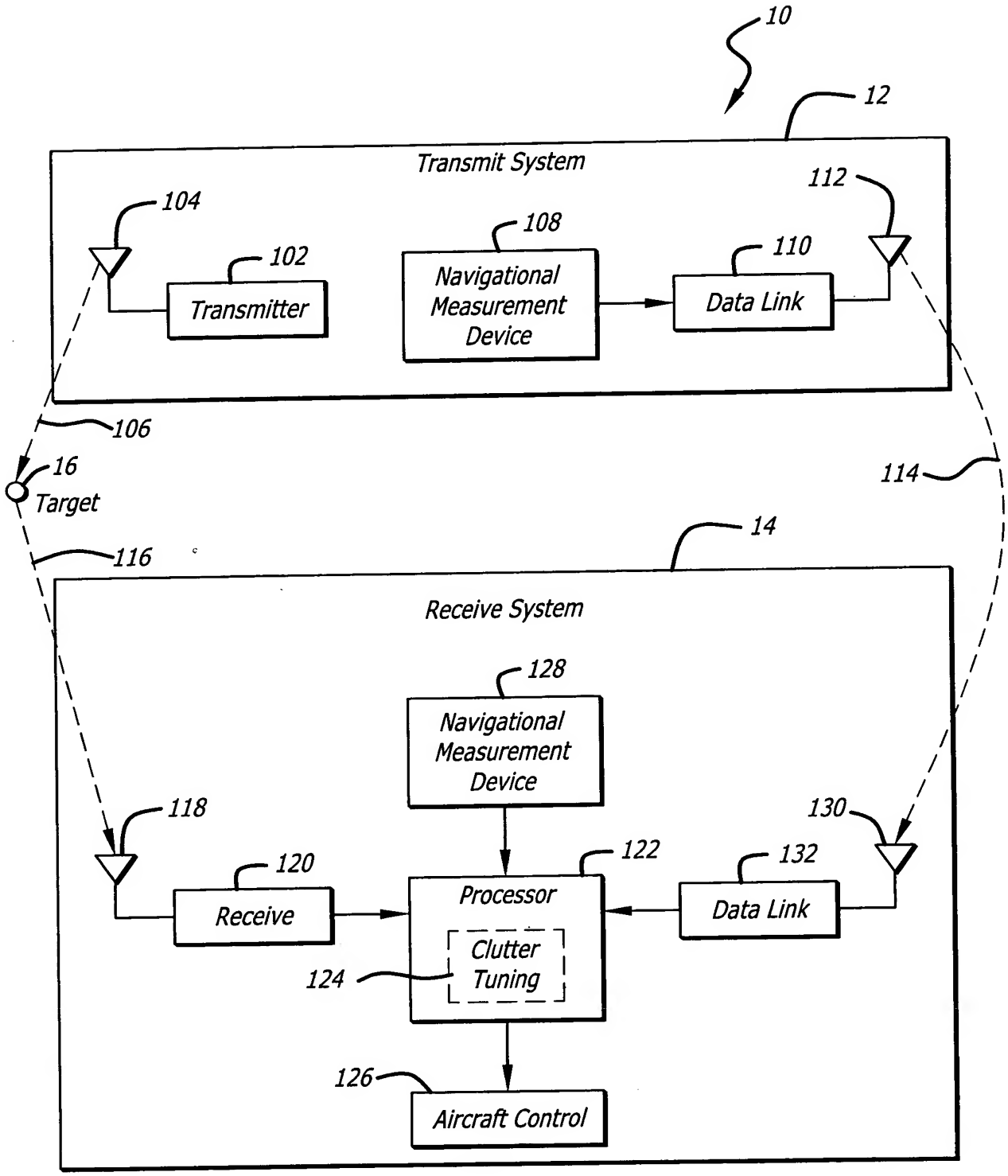
10
12
Transmit System
112
104
108
102
110
Navigational Measurement Device
Transmitter
Data Link
106
16
Target
114
14
116
Receive System
128
Navigational Measurement Device
118
130
120
122
132
Receive
Processor
Data Link
Clutter Tuning
124
126
Aircraft Control

FIG. 3

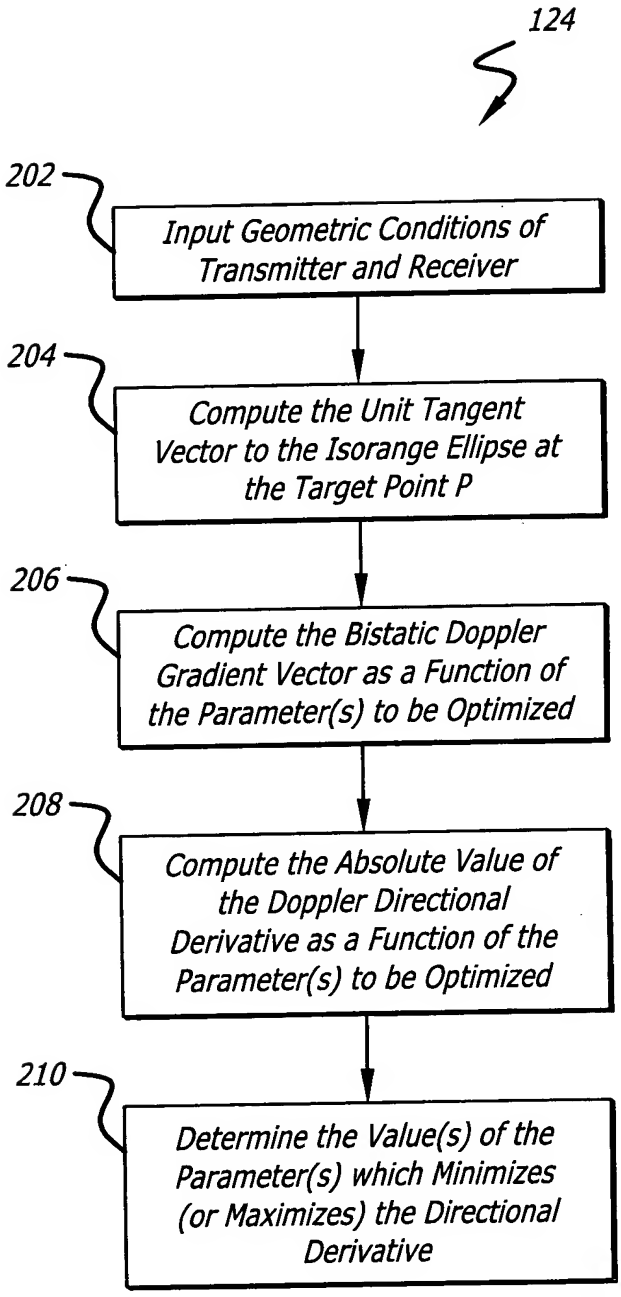
124
202
Input Geometric Conditions of Transmitter and Receiver
204
Compute the Unit Tangent Vector to the Isorange Ellipse at the Target Point P
206
Compute the Bistatic Doppler Gradient Vector as a Function of the Parameter(s) to be Optimized
208
Compute the Absolute Value of the Doppler Directional Derivative as a Function of the Parameter(s) to be Optimized
210
Determine the Value(s) of the Parameter(s) which Minimizes (or Maximizes) the Directional Derivative

FIG. 4

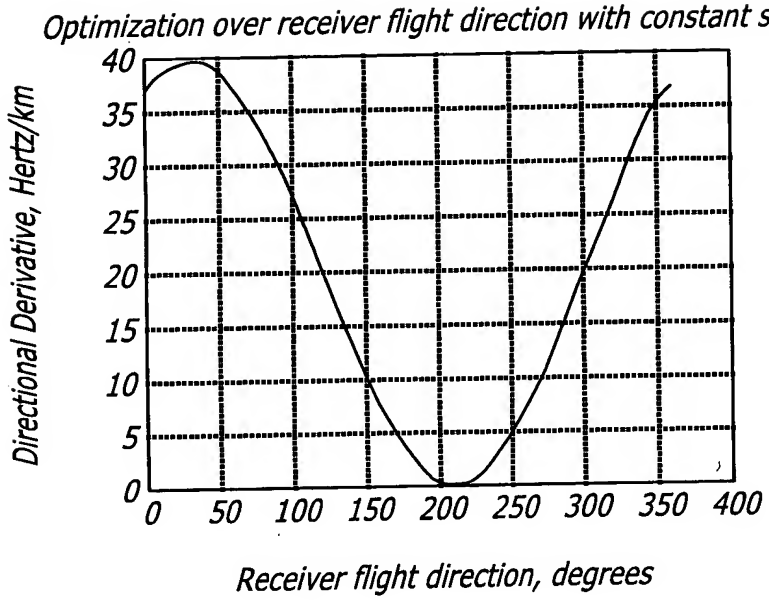
Optimization over receiver flight direction with constant speed
Directional Derivative, Hertz/km
40
35
30
25
20
15
10
5
0
0
50
100
150
200
250
300
350
400
Receiver flight direction, degrees

FIG. 5

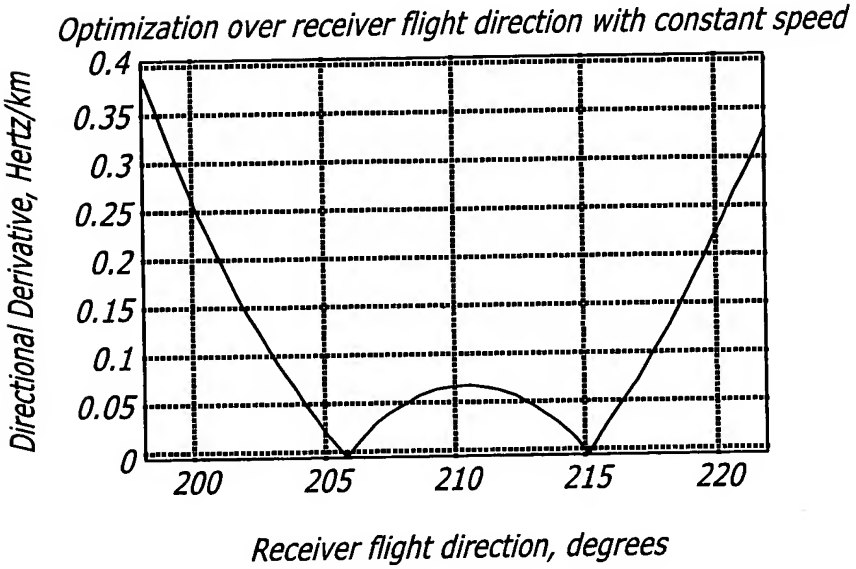
Optimization over receiver flight direction with constant speed
Directional Derivative, Hertz/km
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
200
205
210
215
220
Receiver flight direction, degrees

FIG. 6

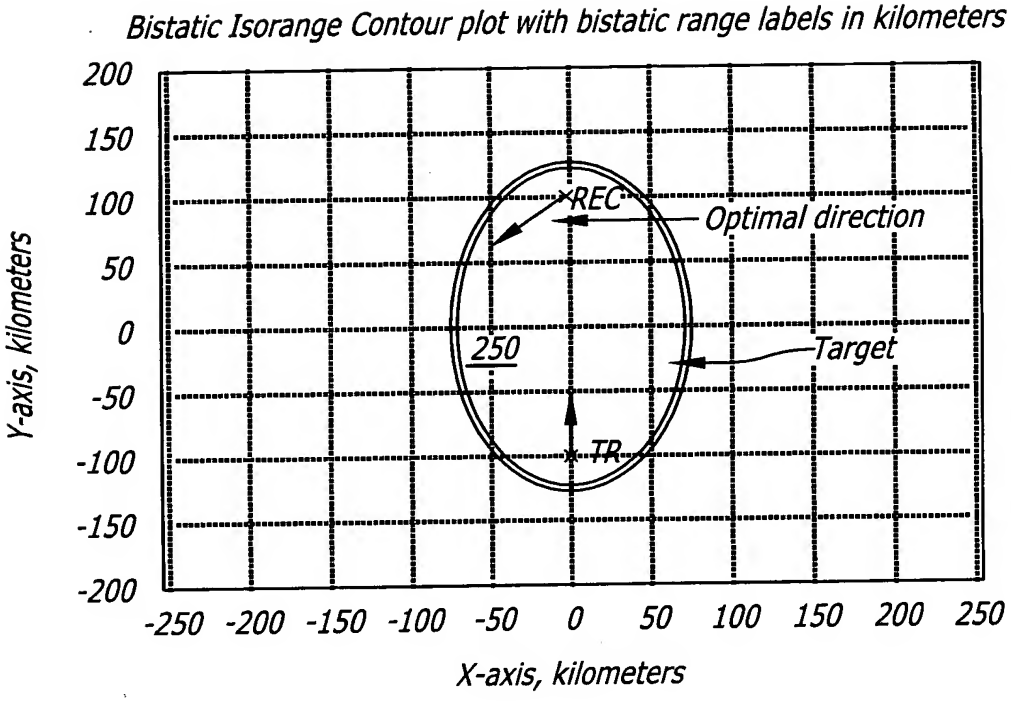
Bistatic Isorange Contour plot with bistatic range labels in kilometers
200
150
100
50
0
-50
-100
-150
-200
-250 -200 -150 -100 -50 0 50 100 150 200 250
Y-axis, kilometers
X-axis, kilometers
REC
Optimal direction
250
Target
TR

FIG. 7

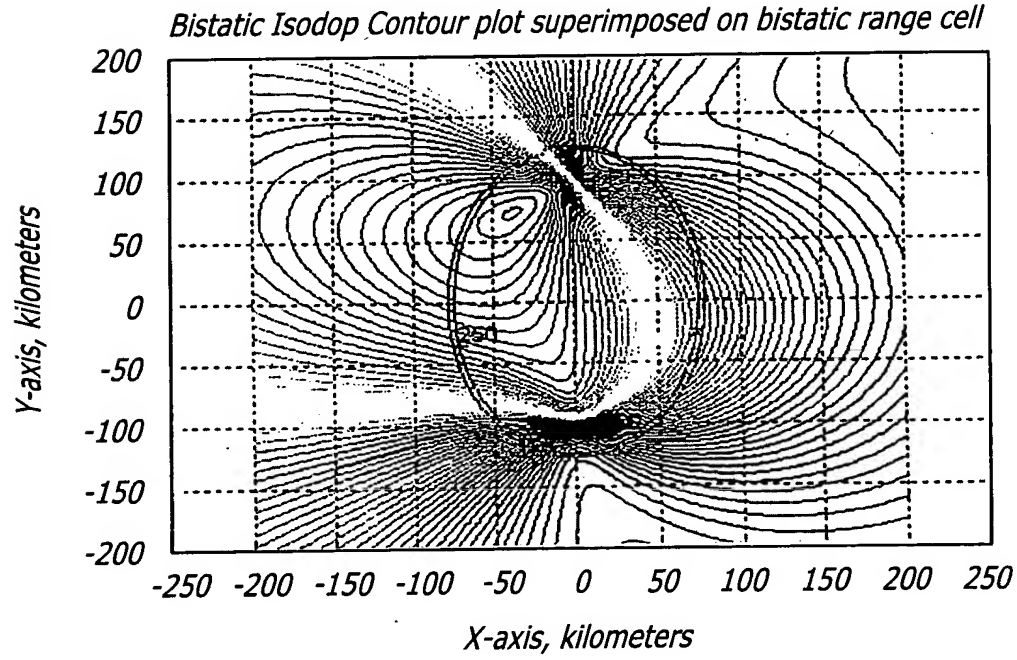
Bistatic Isodop Contour plot superimposed on bistatic range cell
200
150
100
50
0
-50
-100
-150
-200
-250 -200 -150 -100 -50 0 50 100 150 200 250
Y-axis, kilometers
X-axis, kilometers

FIG. 8

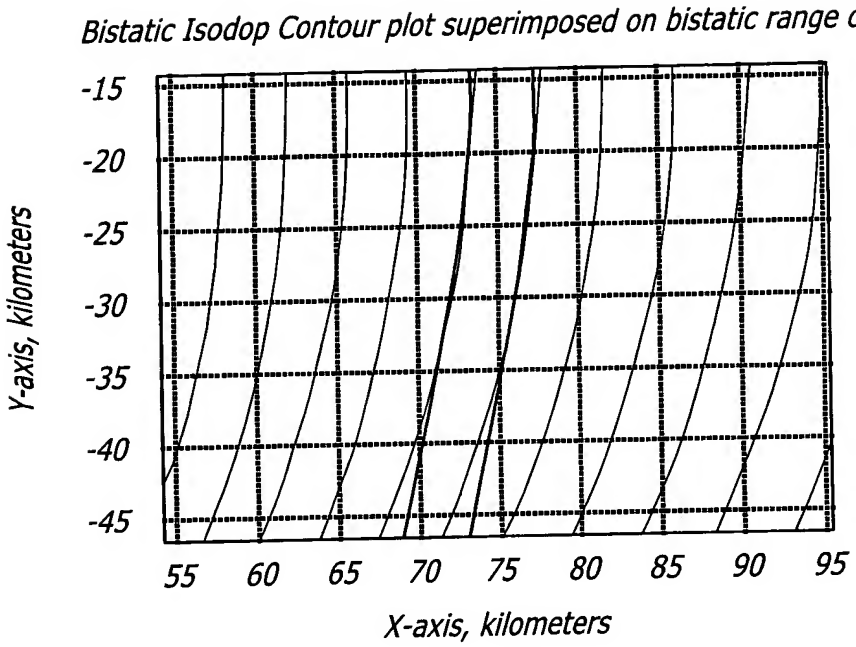
Bistatic Isodop Contour plot superimposed on bistatic range cell
-15
-20
-25
-30
-35
-40
-45
Y-axis, kilometers
55
60
65
70
75
80
85
90
95
X-axis, kilometers

FIG. 9